

Proposal Reviews

#218: Effects of Climate Variability and Change on the Vegetation and Hydrology of the Bay-Delta Watershed

University of California, San Diego, Scripps Institute of Oceanography

Initial Selection Panel Review

Research and Restoration Technical Panel Review

Delta Regional Review

San Joaquin Regional Review

Sacramento Regional Review

External Scientific Review #1
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Environmental Compliance

Budget

Initial Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP Initial Selection Panel Review

Proposal Number: 218

Applicant Organization: University of California, San Diego, Scripps Institute of Oceanography

Proposal Title: Effects of Climate Variability and Change on the Vegetation and Hydrology of the Bay-Delta Watershed

Please provide an overall evaluation rating.

Explanation of Recommendation Categories: Fund

- **As Is** (a proposal recommended for funding as proposed)
- **In Part** (a proposal for which partial funding is recommended for selected project phases or components)
- **With Conditions** (a proposal for which funds are recommended if the applicant contractually agrees to meet the specified conditions)

Consider as Directed Action in Annual Workplan (a proposal addressing a high priority action that requires some revision followed by additional review prior to being recommended for funding)

Not Recommended (a proposal not currently recommended for funding-after revision may be considered in the future)

Note on "Amount":

For proposals recommended as Fund As Is, Fund In Part or Fund With Conditions, the dollar amount is the amount recommended by the Selection Panel.

For proposals recommended as Consider as Directed Action in Annual Workplan, the dollar amount is the amount requested by the applicant(s).

Fund	
As Is	X
In Part	-
With Conditions	-
Consider as Directed Action	-
Not Recommended	-

Amount: **\$645656**

Conditions, if any, of approval (if there are no conditions, please put "None"):

None

Provide a brief explanation of your rating:

This proposal ranks highly (2 excellent + 1 good) on external scientific review but poorly on regional panels. The view of the Selection Panel is to agree with the Technical Panel that this proposal is almost certain to improve our understanding of climate-vegetation-hydrology interactions and will provide the scientific rationale to build an integrative modeling system that can be used to plan and evaluate CALFED restoration efforts. The regional panels were concerned that this did not address the immediate restoration needs, which it does not, but it likely provides important information for the long-term effective restoration of the ecosystem.

Research and Restoration Technical Panel Review:

CALFED Bay-Delta 2002 ERP PSP Research and Restoration Technical Panel Review Form

Proposal Number: 218

Applicant Organization: University of California, San Diego, Scripps Institute of Oceanography

Proposal Title: Effects of Climate Variability and Change on the Vegetation and Hydrology of the Bay-Delta Watershed

Review:

Please provide an overall evaluation summary rating:

Superior: outstanding in all respects;

Above Average: Quality proposal, medium or high regional value, and no significant administrative concerns;

Adequate: No serious deficiencies, no significant regional impediments, and no significant administrative concerns;

Not Recommended: Serious deficiencies, significant regional impediments or significant administrative concerns.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
-Superior	This proposal is clearly justified as a research effort as it will provide important information on climate-vegetation-hydrology interactions. This proposal could eventually be useful to plan for and evaluate future CALFED restoration benefits, but the immediate benefit for CALFED efforts is probably small.
-Above average	
XAdequate	The panel was unsure of the importance of dynamic vegetation for modeling streamflow. If the PIs can do a good job with hydrologic modeling using static vegetation, why do they need to include dynamic vegetation? The project may be worthwhile if the PIs scale back their proposal to focus only on the effects of climate on inter-annual variations in vegetation.
-Not recommended	

1. **Goals and Justification.** Does the proposal present a clear statement of goals, objectives and hypotheses? Does the proposal present a clear justification and conceptual model for the project?

The goals, objectives and hypotheses are clearly stated, and the study is justified relative to existing knowledge. It is clear that we need more information on the magnitude of the effects of climate on vegetation and the effects of climate on streamflow. Such information is critical to properly plan for and evaluate CALFED restoration efforts.

The panel was unsure of the importance of dynamic vegetation for modeling streamflow. If the PIs can do a good job with hydrologic modeling using static vegetation, why do they need to include dynamic vegetation?

2. **Likelihood of Success (Approach, Feasibility, Capabilities and Performance Measures).** Is the project likely to succeed based on the approach, feasibility and project team capabilities? Are the proposed performance measures adequate for measuring the project's success?

The approach is well designed, and the team is certainly capable of effectively completing their research objectives. Concerns with the approach include (1) the short record length of AVHRR data, (2) lack of methods that can properly account for uncertainty in projections of future climate, and (3) no recognition of the efforts of the Land Surface Modeling community.

3. **Outcomes and Products.** Will the project advance the state of scientific knowledge in general and/or make an important contribution to the state of knowledge of the Bay-Delta Watershed? For restoration proposals, is the project likely to contribute to ecosystem restoration or species recoveries in a significant way? Will the project produce products useful to decision-makers and scientists?

The proposed project is almost certain to improve our understanding of climate-vegetation-hydrology interactions. The project will have limited immediate value to decision-makers, but will provide the scientific rationale to build an integrative modeling system that can be used to plan for and evaluate CALFED restoration efforts.

4. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

The budget is reasonable.

5. **Regional Review.** How did the regional panel(s) rank the proposal (High, Medium, Low)? Did the regional panel(s) identify significant benefits (regional priorities, linkages with other activities, local involvement) or impediments (local constraints, conflicts with other activities, lack of local involvement) to this proposal? What were they?

The Sacramento, San Joaquin and Delta Regional Panels all rated the proposal "Low." Concerns were (1) did not address immediate restoration needs in the region (Sacramento, San Joaquin, Delta), (2) use climate as the forcing, and do not assess the impacts of land use change on runoff (Sacramento), (3) LAI would not have the ability to provide data to the level of significance that is required (San Joaquin), and (4) No public outreach program is identified.

6. **Administrative Review.** Were there significant concerns about the proposal with regard to the prior performance, environmental compliance and budget administrative reviews? What were they?

Budget - project management costs not disclosed, proposed overhead rate 52% - should be 10%.

Miscellaneous comments:

None.

Delta Regional Review:

Proposal Number: 218

Proposal Title: Effects of Climate Variability and Change on the Vegetation and Hydrology of the Bay-Delta Watershed

Overall Ranking: ☒Low ☐Medium ☐High

Provide a brief summary explanation of the committee's ranking:

The project's utility to impeding decisions isn't clear.

1. Is the project feasible based on local constraints?

☒Yes ☐No

How?

o The proposal couples an existing hydrologic simulation model of the Sacramento and San Joaquin River basins with a tested vegetation ecosystem process model that simulates the effects of climate variability and change on vegetation and hydrology throughout the watershed. Various data bases will be utilized, including satellite-derived vegetation imagery and land cover maps. The only items to be acquired are data from various existing databases and some computer hardware and software. The time identified to accomplish all tasks seems reasonable.

o The proposal applicants are all experienced in the expertise required to develop the products in this project.

o No CEQA or NEPA documents will be required to complete the proposal.

o The schedule for specific published results is vague. A variety of venues including the CALFED Science Conference, IEP Annual Workshop, the annual Modeling Forum, the IEP Newsletter and peer-reviewed scientific journal publications are identified as candidate venues but no dates are specified.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

☒Yes ☐No

How?

o This proposal is consistent with ERP Draft Stage 1 Delta and Eastside Tributaries Region Restoration Priority #8 (understand climatic + hydrologic variability's impacts on Delta water issues), and with Multi-Region restoration priorities # 4 (Ensure restoration + water management actions can be sustained under future climatic conditions) and 5 (Ensure that restoration isn't threatened by degraded water quality).

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

☒Yes ☐No

How?

o The model will develop information that will simulate future hydrologic behavior and variability as it is affected by climate and vegetative cover in the headwaters of the Sacramento and San Joaquin watersheds. This information has broad implication throughout the Central Valley and would affect system-wide restoration efforts.

4. Does the project adequately involve local people and institutions?

☐Yes ☒No

How?

o The proposal does not address local involvement issues. No public outreach program is identified. There is no indication of public and/or stakeholder sentiments on the proposal, or whether any attempts were made or will be made to solicit such sentiments.

o Computers housed at the Tiburon Center for Environmental Studies will be used in this project. Coordination with the staff at that facility will need to occur.

Other Comments:

XX

San Joaquin Regional Review:

Proposal Number: 218

Applicant Organization: University of California, San Diego, Scripps Institute of Oceanography

Proposal Title: Effects of Climate Variability and Change on the Vegetation and Hydrology of the Bay-Delta Watershed

Overall Ranking: ☒Low ☐Medium ☐High

Provide a brief summary explanation of the committee's ranking:

The panel was concerned that the LAI would not have the ability to provide data to level of significance that would be needed. Most of watershed vegetation is perennial. Drought changes in perennial vegetation are not reflected until after the drought has ensued. It is not clear how this project will immediately contribute to ensuring restoration actions.

1. Is the project feasible based on local constraints?

☐Yes ☒No

How?

The vegetation data is available for these models to be effective in this area. Annual grasslands in the foothills are not going to respond as most perennial grassland biomes for which there are existing models and this problem was not identified in the proposal. Further, it is doubtful that the interannual vegetation differences are significant enough to be measurable from satellite technology unless it were a long term drought period.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

☐Yes ☒No

How?

This is a research study that is unaffected by local environmental or social constraints.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

☐Yes ☒No

How?

No direct connection or link has been attempted to any specific projects. The project should be related to other climate research, but no links were described in the proposal.

4. Does the project adequately involve local people and institutions?

-Yes ☒No

How?

Personnel from two local educational institutions are involved, (UC and SFSU) with two out of state universities. No local landowners or stakeholders are involved.

Other Comments:

Sacramento Regional Review:

Proposal Number: 218

Applicant Organization: University of California, San Diego, Scripps Institute of Oceanography

Proposal Title: Effects of Climate Variability and Change on the Vegetation and Hydrology of the Bay-Delta Watershed

Overall Ranking: ☒Low ☐Medium ☐High

Provide a brief summary explanation of the committee's ranking:

Although this proposal addresses one of the questions put forth by CALFED, the Review Panel did not feel that this study addressed immediate restoration needs in the region. Better linkages are needed with some of the ongoing and planned restoration projects.

1. Is the project feasible based on local constraints?

☒Yes ☐No

How?

It appears that the data and facilities needed to conduct the study are available or could be obtained by the PIs.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

☒Yes ☐No

How?

Ensure restoration and water management actions through all regions can be sustained under future climatic conditions is listed as one of the PSP Restoration Priorities for Multi-Region Bay-Delta Areas. The present study would provide perhaps the most powerful tool to evaluate future hydrology that would be available for restoration.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

☐Yes ☒No

How?

This is primarily a research project, which has reasonably good links to local institutions doing research in the Estuary. Relative to other proposals we reviewed, this project had perhaps the weakest links with restoration planning and implementation. The results may be very useful for planners; however, it is not clear how linkages would be made to restoration. The authors mention several meetings where their results would be presented, but there are no restoration projects or groups that the study is directly linked to.

4. Does the project adequately involve local people and institutions?

XYes -No

How?

As noted above, the study involves local researchers such as USF, but includes no stakeholders.

Other Comments:

The proposed modeling effort would result in a powerful set of tools to examine long-term effects on hydrology and vegetation. This team appears well qualified to do the work.

One source of disappointment for the Review Panel (perhaps because they were not particularly knowledgeable in this subject area) is that the modeling effort did not address one of the most interesting hydrologic questionswhat are the effects of land use changes on runoff? Instead, the model uses climate change as the forcing, not land use. The discussion on Page 4 suggests that the lack of long term change in Bay salinity levels (despite significant increase in water diversions) could be at least partially a result of changes in land use or vegetation in the watershed. The model results would be much more useful if they included scenarios that included the effects of projected future changes in land use in the Sierra and Valley.

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: **218**

Applicant Organization: **University of California, San Diego, Scripps Institute of Oceanography**

Proposal Title: **Effects of Climate Variability and Change on the Vegetation and Hydrology of the Bay-Delta Watershed**

Conflict of Interest Statements:

I have no financial interest in this proposal.

XCorrect

-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;

Good: quality but some deficiencies;

Poor: serious deficiencies.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
X Excellent	This project will help us quantify the effects of climate variability on interannual variations in vegetation, and, in turn, the effects of interannual variations in vegetation on streamflow. This will help provide the scientific rationale to properly account for the climate-vegetation-streamflow interactions when planning and evaluating CALFED restoration efforts. The PIs are capable of effectively implementing their research plan.
-Good	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

The goals and objectives are clearly stated. This proposal is very well written, and the PI obviously has a good understanding of the research problem and challenges. The concept of properly accounting for changes in vegetation is important for scientific purposes, and seems to be necessary to provide the scientific rationale for CALFED restoration goals.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project

justified?

This proposal builds nicely upon the existing body of knowledge, and the PIs provide a clear outline of the research pathways they propose to pursue. This project will help us quantify the effects of climate variability on interannual variations in vegetation, and, in turn, the effects of interannual variations in vegetation on streamflow. Although the hydrologic impacts of interannual variations in vegetation may be small (the PIs provided a good simulation of interannual variations in streamflow using static vegetation), this project will help quantify climate-vegetation-hydrology linkages. Full-scale implementation of this project is justified.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

The approach is solid for the most part. I have only minor concerns:

1. **Many of the land surface models (LSMs) that are used in atmospheric modeling systems are now beginning to account for dynamic vegetation. I was surprised that the PIs did not mention these efforts, as advances made in the LSM community may be quite useful for their research.**
2. **I was surprised that the AVHRR time series were only available for 1989-present (I thought AVHRR data extended back to the early 1970's). This only presents a problem in that the PIs will not be able to monitor the (possible) decreases in LAI in the early states of the 1987-1992 drought. If earlier AVHRR data is available from other sources, I hope that these can be used to extend the LAI time series.**
3. **I note with some concern that the PIs only plan to use one climate model and one downscaling technique to assess the effects of climate change on vegetation and hydrology. This could be considered somewhat irresponsible, as this one model does not adequately encompass the range of variability that we may encounter in a future climate (i.e., the climate in 2050 may turn out to be significantly different from what is depicted in this one model scenario). I would encourage the PIs to either drop this component from their project, or significantly increase their budget so they can adequately account for the uncertainty in projections of future climate.**
4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

The PIs should have no problem effectively implementing their research plan.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

The performance of this project is measured in terms of information output (i.e., number and quality of peer-reviewed publications). This is appropriate for this research endeavor.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

The products include the information output in terms of presentations, reports, and peer-reviewed publications, the database of satellite-derived vegetation and hydrologic indices, and finally their modeling system. These products are all useful for advancing science, and will ultimately be useful to help build a comprehensive modeling system that is of use to decision makers.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

I don't know the PI personally, but I did manage to find a digital copy of his/her doctoral dissertation (2000) on the internet. He/she has done some impressive research. On the basis of this, I think the PI (as well as the other investigators, whose work I am more familiar with) will be able to effectively implement their research plan.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

The budget is reasonable for what is planned, but may need to be reduced or increased depending on the PI's decision on what to do with the climate change aspect of the project.

Miscellaneous comments:

None.

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: **218**

Applicant Organization: **University of California, San Diego, Scripps Institute of Oceanography**

Proposal Title: **Effects of Climate Variability and Change on the Vegetation and Hydrology of the Bay-Delta Watershed**

Conflict of Interest Statements:

I have no financial interest in this proposal.

XCorrect

-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;

Good: quality but some deficiencies;

Poor: serious deficiencies.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
-Excellent	The modeling and remote sensing analysis capabilities of the team are clear. The need for incorporating vegetation change into hydrologic models is unconvincing, particularly because changing agricultural practices are not well incorporated into the model. The project is of scientific interest, but I question its relevance to management.
XGood	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

The goal of this research is to develop a model that incorporates the response of vegetation to climate in order to incorporate the role of vegetation in generating (seasonal to interdecadal) hydrologic variability in a hydrologic model of the Sacramento River Basin. This goal is clearly stated. The concept is timely, but it is difficult to evaluate its importance because agricultural vegetation and water management (e.g. dam operations) are not well incorporated into the proposed model. Since both of these are important drivers of hydrologic variability in the basin, this seems to me to limit the usefulness of the proposed model.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

The assertion is that hydrologic variability in the headwaters dominates management effects. Vegetation is incorporated into existing hydrologic models based on parameter choice. It is not clear the extent to which model output would be improved by explicit incorporation of vegetation, particularly since agricultural vegetation is handled in such a cursory fashion.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

The approach utilizes existing AVHRR data from 1989-present. Given the remote sensing expertise in the state of California, I am astonished that these data have not already been analyzed.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

The proposed approach is clearly explained. Although the project is likely to succeed in dealing with vegetation changes in the headwaters, the overall value of the resulting model is compromised by the lack of attention to agriculture. How are changes in agricultural practices incorporated into the model?

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

These appear to be publications in peer-reviewed journals, which is an appropriate performance measure for a scientific research project.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

It is not clear how or even if the model would be made available to managers and what steps would be taken to make it usable by others.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Both hydrologic modeling expertise and remote sensing expertise are clearly present on the team. The PI is expanding a hydrologic model that he has developed for the Basin.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

Seems reasonable.

Miscellaneous comments:

External Scientific: #3

Research and Restoration External Scientific Review Form

Proposal Number: **218**

Applicant Organization: **University of California, San Diego, Scripps Institute of Oceanography**

Proposal Title: **Effects of Climate Variability and Change on the Vegetation and Hydrology of the Bay-Delta Watershed**

Conflict of Interest Statements:

I have no financial interest in this proposal.

XCorrect

-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

Cayan (a co-applicant) is affiliated with the USGS.

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;

Good: quality but some deficiencies;

Poor: serious deficiencies.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
X Excellent	I think this is a clear proposal describing useful and important research.
-Good	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

The goals, objectives, and hypotheses are clearly stated and mostly internally consistent. They concern the interactions of climate, vegetation, and hydrology in the Bay-Delta watershed. These interactions are proposed to be examined on year-to-year, multi-year, and long-term time scales. The first and second time scales are considered in this proposal. The third time scale (related to projected climate change) is not really addressed in this proposal but is the subject of a companion proposal.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

The study is justified relative to existing knowledge. The conceptual model is clearly presented and relevant to the study questions. The potential that interactions between climate, vegetation, and hydrology are important and not well understood is clear.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

The approach is well designed and appropriate the meeting the objectives of the project. A combination of empirical (historical climate and flow data combined with time sequences of AVHRR data) and modeling approaches will be used. The results are likely increase understanding linkages between hydroclimatology and vegetation.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

The proposed work is feasible with a high likelihood of success. The tools (data and models) are available and the applicants have significant expertise with these tools. The scale of the study area and the scope of the project are well matched.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

Performance is measured in this study in part by model testing (comparing model estimates with appropriate measurements). This is the appropriate type of performance measurement for the study. Performance also will be measured by the quality of publications produced.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

The main products are the tested and refined model, the interpreted historical time series of AVHRR data, and improved understanding of interactions between vegetation, climate, and hydrology in the Bay-Delta watershed.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

I expect the applicants to be capable of achieving the project goals. Their past publications suggest a high level of necessary expertise. The infrastructure also is adequate.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

The budget seems reasonable.

Miscellaneous comments:

None.

Environmental Compliance:

Proposal Number: 218

Applicant Organization: University of California, San Diego, Scripps Institute of Oceanography

Proposal Title: Effects of Climate Variability and Change on the Vegetation and Hydrology of the Bay-Delta Watershed

1. Are the legal or regulatory issues that affect the proposal identified adequately in the proposal?

☒Yes ☐No

If no, please explain:

2. Does the project's timeline and budget reflect adequate planning to address legal and regulatory issues that affect the proposal?

☒Yes ☐No

If no, please explain:

3. Do the legal and regulatory issues that affect the proposal significantly impair the project's feasibility?

☐Yes ☒No

If yes, please explain:

Other Comments:

Budget:

Proposal Number: 218

Applicant Organization: University of California, San Diego, Scripps Institute of Oceanography

Proposal Title: Effects of Climate Variability and Change on the Vegetation and Hydrology of the Bay-Delta Watershed

1. Does the proposal include a detailed budget for each year of requested support?

☒Yes ☐No

If no, please explain:

2. Does the proposal include a detailed budget for each task identified?

☒Yes ☐No

If no, please explain:

3. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs?

☒Yes ☐No

If no, please explain:

4. Are appropriate project management costs clearly identified?

☐Yes ☒No

If no, please explain:

Nothing disclosed!

5. Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary?

☒Yes ☐No

If no, please explain (for example, are costs to be reimbursed by cost share funds included in the budget summary).

6. Does the budget justification adequately explain major expenses?

☒Yes ☐No

If no, please explain:

7. Are there other budget issues that warrant consideration?

XYes -No

If yes, please explain:

Proposed overhead rate 52%, should be approximately 10%.

Other Comments: